Red Rock Canyon Rocks
Classroom Program
by Heather McGiffert
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Grade: Third

Subject: Earth Science

Theme: There are three types of rocks that are interrelated through the rock cycle. The types of rocks at RRC reflect its geological history of oceans, swamps, river, and coastal sand dunes. Classification of rocks is an important part of geology.

Goal: Students will compare, test, measure, record, and describe observable properties of rocks and minerals. CCSN (3)1.1

Objectives: Students will be able to (a) identify three or four rocks found in Red Rock Canyon, (b) classify the three main types of rocks- igneous, metamorphic, and sedimentary.

Curriculum: Science 3.1, Science 3.2
Classify three main types of rocks /Identify Red Rock Canyon rocks,

Materials:
-Rock Cycle Game Boards
-Bags of assorted rocks (For game)
-1 large bag of rocks
-Samples of types of rocks

Background: Rocks are aggregates of minerals. There are three main types of rocks: igneous, metamorphic, and sedimentary. Each group is formed by distinctive geological processes. Igneous rocks are those that form from molten rock or magma. Sedimentary rocks form either; from particles that settle out by wind, water, or ice that are compacted and cemented to form rock, or by precipitation of minerals from sea water. Metamorphic rocks are formed when pre-existing igneous, metamorphic, or sedimentary rocks are changed due to heat and/or pressure.
Red Rock Canyon is formed of sedimentary rocks. The limestone rocks filled with fossils reflect an earlier ocean basin teeming with marine life. Crust movement caused the sea bed to rise creating streams and swamps. Changing land and sea levels trapped large bodies of water which evaporated leaving mineral deposits such as gypsum. Sand dunes of past eras have consolidated into the red and tan sandstones we see today.

Vocabulary:

geology- the science that deals with the study of the planet Earth- what it is made, how it changes, why it changes, and its history.
mineral- a natural, nonliving solid made up of elements like silicon, oxygen, carbon and iron.
rock- a natural combination of one or more minerals
igneous rock- a rock cooled from a molten or liquid form (magma)
sedimentary rock- a rock made up of pieces of older rocks, parts of plants, or animals
metamorphic rock- a rock changed from its original form by heat, pressure, or chemical action
sandstone- a sedimentary rock made up of cemented sand grains
limestone- a sedimentary rock made up of the mineral calcite
shale- a sedimentary rock made of clay
conglomerate- a sedimentary rock made up of large rounded particles surrounded in a matrix of sand
fossil- the remains of past plants or animals found in rocks

Key Points

Scientist called geologists study the earth and its geology

Rocks form in different ways - over years and years
Rocks are classified in three ways - igneous (molten rock/lava), metamorphic (heat and pressure/turquoise), sedimentary (compacted and cemented such as sandstone/limestone).
By observing color, texture, size, shape, a geologist can identify many rocks.
Rocks go through cycles overtime and these cycles are interconnected.
By sorting you can learn the differences between rocks
Some rocks are smooth because of water or ice rubbing against the rock.

.Pre-Visit Activity - Go over the vocabulary with the students. It is important that they are familiar with the terms for the lesson to be effective. Have the students brainstorm ways that they use rocks and minerals everyday. Ask them how their lives would be different without them.

During Visit-

Activity

What geology is, what a geologist is. (A scientist - observation is very important to this science.)

Activity

1) "Remember Me?" The students select a rock from the bag. Have them feel the shape, texture in their hand, what colors do they see, soft, smooth, rough, sharp. Have them close their eyes and feel their rock. After studying them for a few minutes they are collected again. Then all of the rocks are poured out and the children are challenged to find their rock again. Emphasis placed on what features helped them to remember their rock, i.e. observations that they made.

(May want children to draw their rock and name it as this keeps them busy as other children are finishing up.)

Activity

2) Small bags of rocks will be given to groups of students and they will attempt to sort the rocks according to a few different characteristics; color, size, shape, etc.

3) Discuss a few particular rocks with children that are common at RRC. Rocks such as sandstone, limestone. Remind them they saw some of these same rocks at RRC.

Activity

4) "Rock Cycle Game" - The game involves progressing through the rock cycle. Pass out game pieces. Split class into 6 groups and play. Give instructions. Have children name the cycle they are passing through as they play.

Conclusion: Summarize the importance of geology at RRC.